

FOR **ADVANCED DESIGN** IN EARTHMOVING AND
MATERIAL HANDLING EQUIPMENT--"**HENRY HAS IT!**"

23 9PM.

PARTS and INSTRUCTION
MANUAL

MODEL L600

INTERNATIONAL 350



HENRY

"YOU CAN DO IT BETTER WITH A HENRY"

MANUFACTURING
COMPANY, INC.
TOPEKA, KANSAS



WARRANTY

The Henry Manufacturing Co., Inc. warrants each new product to be free from defects in material and workmanship for a period of ninety (90) days from date of delivery to owner.

THIS WARRANTY IS VOID UNLESS THE DELIVERY REPORT OR REGISTRATION CARD IS RETURNED TO THE FACTORY WITHIN 10 DAYS FROM DATE OF PURCHASE. This warranty does not apply to any product that has been altered without the authorization of the manufacturer or has been subjected to misuse and negligence.

The Manufacturer's obligation is limited to the replacement of such parts as shall appear, upon inspection at the factory, to have been defective in material or workmanship. This warranty does not obligate the manufacturer to bear costs of transportation or labor in connection with the replacement or repair of defective parts.

The Henry Manufacturing Co., Inc. reserves the right to make changes in or add improvements to the design or construction of HENRY products at any time without incurring obligation on HENRY products previously sold.

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FOREWORD

This Instruction Manual and Parts Catalog contains information necessary for the installation, operation and maintenance of HENRY Equipment.

The Equipment has been carefully designed and manufactured of quality materials. With proper care it will give many years of trouble-free service. Read your Manual carefully and follow instructions on service, safety and operation.

INSTRUCTIONS FOR ORDERING PARTS

In order to simplify and expedite shipment of parts follow these instructions:

1. Order parts through the dealer from whom you purchased the unit.
2. Give full name of consignee and destination of shipment.
3. State clearly method by which shipment is to be made, such as Parcel Post, Motor Freight, Rail Freight, etc.
4. List clearly parts required, stating number of pieces wanted, part number and part name.
5. IT IS IMPERATIVE THAT YOU GIVE THE SERIAL NUMBER AND MODEL NUMBER OF MACHINE FOR WHICH PARTS ARE BEING ORDERED. BE SURE TO INCLUDE ALL PREFIX AND SUFFIX LETTERS AND NUMBERS.
6. Confirm all telephone and telegraph orders in writing.

A Careful Operator

IS THE BEST INSURANCE

AGAINST AN ACCIDENT

—National Safety Council.

SECTION I

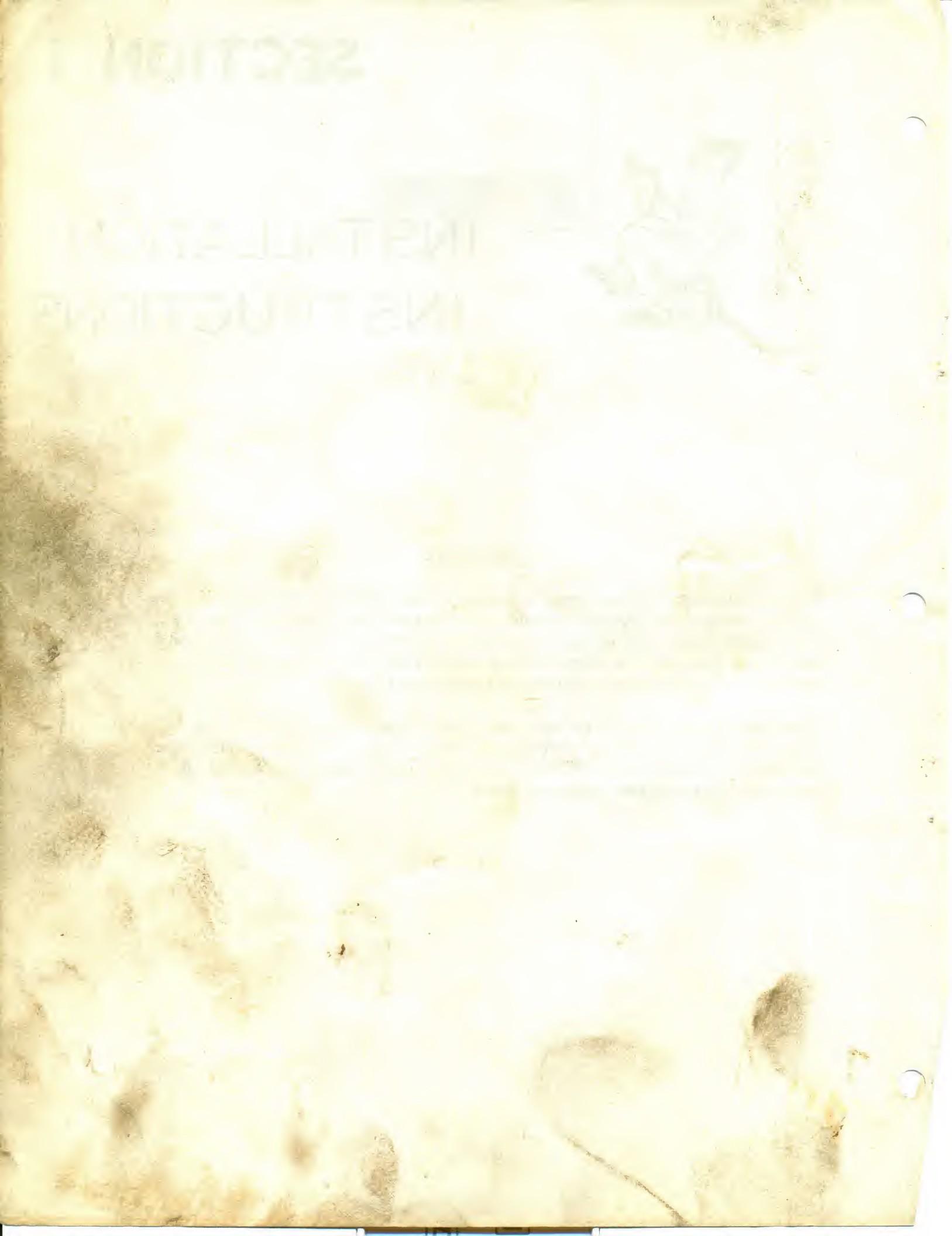


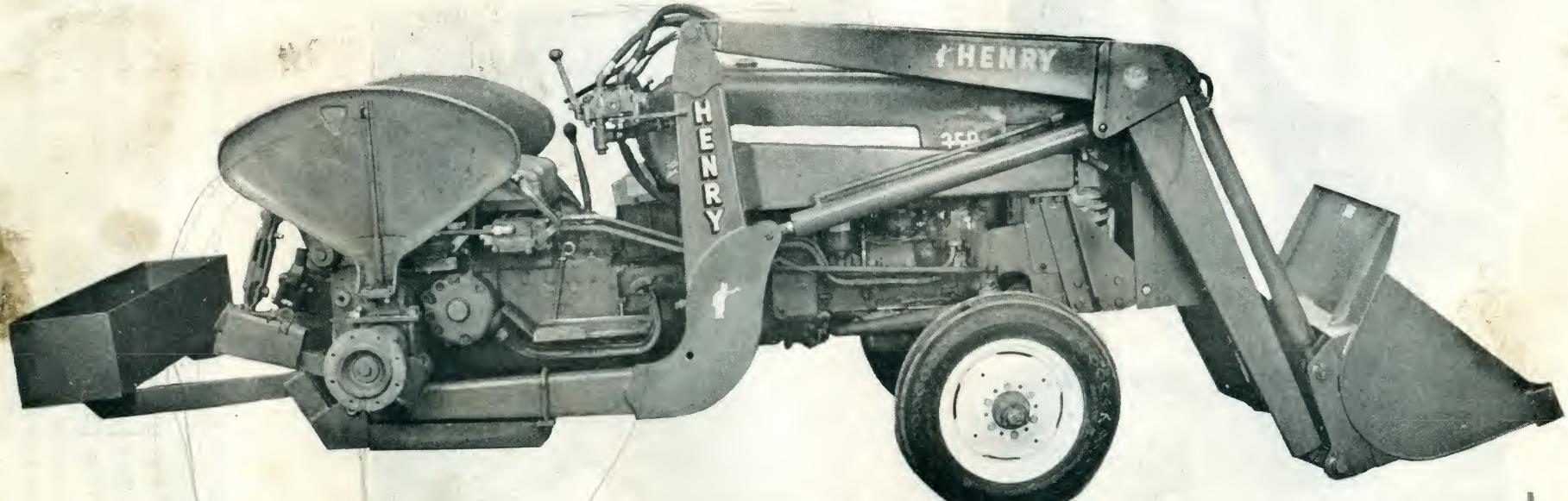
INSTALLATION INSTRUCTIONS

GENERAL

The Installation Instructions contained in this book for mounting HENRY Industrial Equipment should be read very carefully and very thoroughly before the actual installation is begun. These instructions have been written in a step-by-step manner to insure that the person mounting the equipment will not get ahead of himself.

The Instructions should be read through at least once and then the steps followed exactly as they are written. This procedure will make the installation easier and less time consuming than going ahead on your own only to have difficulty later.





HENRY L-600 LOADER
MOUNTED ON
INTERNATIONAL HARVESTER 350 TRACTOR
FIG. 1-1

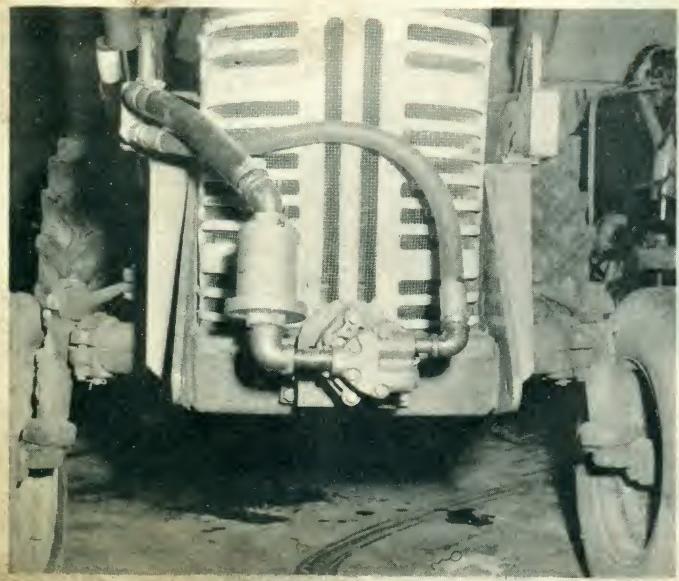


FIG. 1-2

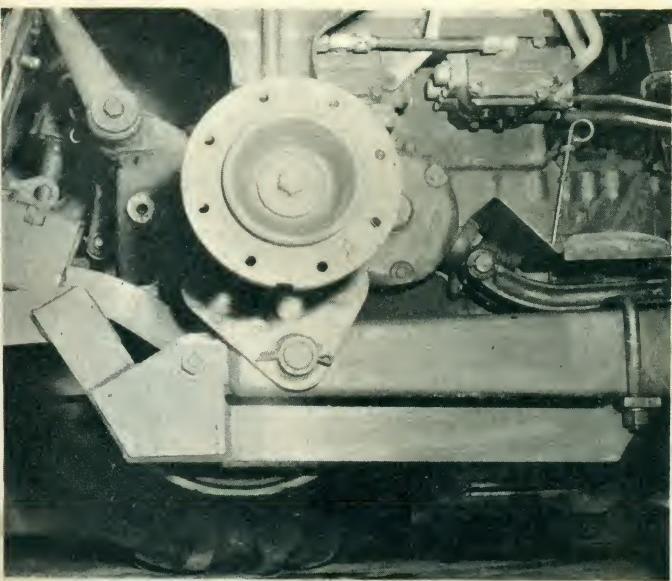


FIG. 1-3

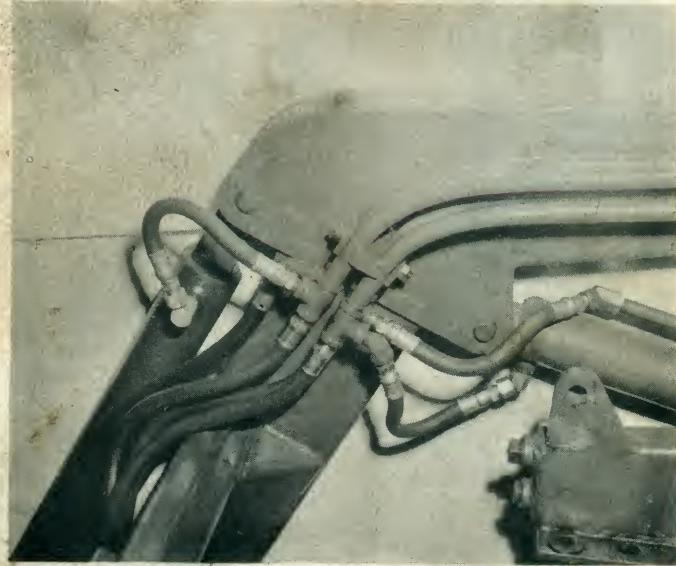


FIG. 1-5

NOTE: Figure 1-3 shows the position that the rear loader brackets should be installed on the 300 & 350 tractors. The mounting pin is off-set toward the front of the tractor or in front of the center line of the rear axle. These brackets can be turned around on the 330 tractor if desired for shorter mounting. Be sure the pin retainers on the brackets are on the outside toward the wheel so that the tractor fast hitch will be free to move up and down.

INSTALLATION INSTRUCTIONS

The Henry L-600 Loader for the International Harvester "330" and "350" Utility Tractors can be mounted in combination with the Henry Mark II Backhoe or the Henry Super C-10H Backhoe and operated from the same hydraulic system. When either Backhoe is used a "CH-1" Combination Hydraulic Group should be installed on the tractor. The following Backhoe Mounting Groups are also required:

	<u>330</u>	<u>350</u>
Mark II	BL-3	BL-2
Super C-10H	CL-3	CL-2

HYDRAULIC PUMP INSTALLATION

There are two different pump groups available for use on the IHC "330" and "350" Utility Tractors. One group contains a small capacity pump (15 GPM @ 1800 RPM) complete with mounting brackets and drive assembly. The other group contains a large capacity pump (22 GPM @ 1800 RPM) complete with mounting brackets and drive assembly. Either of these groups can be used with the loader; however, the larger pump is recommended when a Henry Backhoe is mounted in combination with the loader. To mount either of these groups the following instructions are given. (Refer to pump group drawings.)

1. Remove crank jaw nut from engine crankshaft.
2. Install crankshaft coupling (1) and bolt to crankshaft pulley. (Tractor must be equipped with Front PTO Drive Pulley).
3. Bolt pump mounting bracket (11) to pump mounting pad below radiator grille.
4. Crank hole in front end support castings should be enlarged to at least 1-1/8" diameter to provide running clearance for pump drive shaft.
5. Install chain coupling (8) and pump drive shaft (6) on pump (14).
6. Place pump in position with pump drive shaft (6) engaging crankshaft coupling (1) and bolt to pump mounting bracket (11).
7. Install fittings in pump.

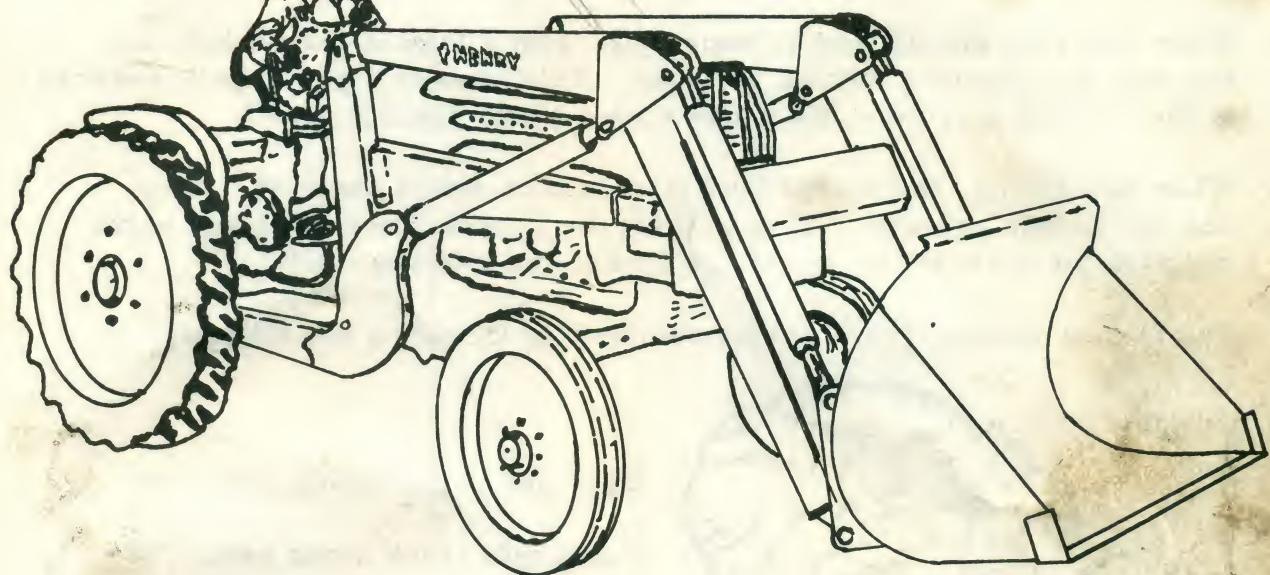
LOADER INSTALLATION

1. Remove the tractor headlights and rear fenders.
2. Install the front loader brackets (1 & 2) (Fig. 4-3).
3. Install the rear loader brackets (5). IMPORTANT: The pin holes in the rear loader brackets are off-set so that these brackets will work with either the "330" or "350" tractor. On the "330" Tractor, the pin hole should be to the rear of the center line of the rear axle with the pin retainer bushing on the outside next to the wheel (See Fig. 1-3). On the "350" Tractor, the pin hole should be in front of the center line of the rear axle and with the pin retainer bushing on the outside next to the wheel (See Fig. 1-4).

4. Install rear fenders on the upper clamp assembly (6).
5. Install right and left halves of the loader mainframe.
6. Install the lift arms. Bolt the tie bar between the mainframe halves.
7. Place the lift cylinders on the loader with the tail connected to the lift arms. The rod end connects to the mainframe. Install the bucket cylinders with the bucket indicator on the left side of the loader. (See Fig. 4-2).
8. Bolt the control valve to the valve mounting bracket. The return line runs from the port in the bottom of the valve to the port in the loader mainframe just below the valve bracket. The 3/4" x 18" pressure hose runs from the 3/4" coupling on the loader mainframe that comes from the front of the loader and goes to the intake port on the control valve. (See Fig. 4-2).
9. Connect the hoses according to the color coding. (See Fig. 1-5 & 4-2).
10. Hose the pump to the loader as shown in Fig. 1-2. Install grille guard.
11. Fill the loader reservoir to the proper level with recommended oil. Operate loader cylinders a few times to remove air and fill the reservoir to the proper level.
12. Rear weight box brackets are available if the tractor does not have rear mounted equipment. If a weight box is used there should be approximately 1000 pounds ballast in it.
13. Install tractor headlights on loader mainframe at the lift arm pivot. Recheck the installation to make certain it was done correctly. Tighten all bolts and fittings.
14. Install bucket or other attachment. Grease all pivot points.

SECTION II

OPERATION



Anyone who can drive a tractor can operate a HENRY. Naturally, as with any fine piece of equipment, certain rules must be followed to insure both safety for the operator as well as care of the equipment. Read these rules carefully and always observe them -- no matter how much confidence you gain in yourself after you have become familiar with the equipment. Injury can happen only as the result of negligent operation.

1. Before starting the tractor, always make certain that the gear shift is in neutral position and the clutch pedal is depressed. The operator should not start the tractor when standing on the ground because of the possibility of his being run over.
2. The tractor should be allowed to warm up to NORMAL operating temperature before driving the unit or operating the loader. This warm-up period must be at an idle since it is not only injurious to the tractor itself, but to the hydraulic system of the loader to warm it up at a fast RPM. The pump can be seriously damaged when trying to force cold oil thru it. The MAINTENANCE AND SERVICE Section (Section III) will tell you what oil to use at various temperatures.

3. The loader control valve should be hosed up such that when the handle closest to the operator is pulled, the lift arms will raise. The Bucket control should load the bucket when the handle is pushed forward. This makes it easier for the operator to level the bucket while raising the lift arms.
4. The bucket level indicator should be set so that the bottom of the bucket is level with the ground when the rod is even with the top of the tube.
5. When lowering the lift arms, especially with a load in the bucket, do not stop the lowering motion abruptly. This causes high surge pressures in the hydraulic system and undue strain on the tractor itself.
6. When backfilling, the loader bucket should be set at about 45° dump and left in this position. This will let the bucket "suck" into the earth and also let the dirt fall out of the bucket and into the ditch.
7. The fastest loading cycle can be obtained by following the diagram:



SECTION III



MAINTENANCE AND SERVICE

PREVENTIVE MAINTENANCE

A good preventive maintenance program will give you continued trouble-free operation.

A suggested preventive maintenance program is outlined below.

-Daily-

1. Check and tighten all mounting bolts and pins.
2. Check Hydraulic System for leaks.
3. Check Hydraulic System for proper oil level. Add only recommended oils when necessary.
4. Follow Tractor Operators Manual for daily maintenance checks.

-Weekly-

1. Follow DAILY check procedure.
2. Lubricate all pivot points with pressure gun grease.
3. Follow Tractor Operators Manual for weekly maintenance.

- Monthly -

1. Clean hydraulic system filter or screens.
2. Clean hydraulic system breather cap. Wash in solvent and reoil.
3. Inspect all hydraulic hoses and fittings. Tighten where necessary to stop leaks. Be sure hoses hang freely to prevent chafing.
4. Follow regular tractor maintenance program.

- Annually -

1. Disassemble hydraulic cylinders for inspection. Replace seals if necessary. Clean and adjust.
2. Inspect bronze bushings on cylinders. Replace if worn excessively.
3. Check control valve for leaks around spools. Install new seals if necessary.
4. Clean and inspect hydraulic pump and drive assembly for wear. Replace when necessary.
5. Clean oil reservoir, filter and plugs. Tighten and readjust all hydraulic fittings.
6. Fill oil reservoir with new oil.
7. Follow regular tractor maintenance program.

HYDRAULIC OIL

The selection of oil for use as a hydraulic fluid must be made with extreme care to insure satisfactory operation of the hydraulic system. IF TRACTOR HYDRAULIC SYSTEM IS USED FOLLOW OPERATORS MANUAL FOR CORRECT HYDRAULIC FLUID.

If the Independent Hydraulic System is used select a grade of hydraulic or lubricating oil that meets the viscosity requirements as follows:

Temperature Range below 0° F	---SAE 5
Temperature Range 0° to 90°	---SAE 10
Temperature Range above 90°	---SAE 20 or 30

Generally speaking, the oil selected should have good chemical stability with a high viscosity index. It should have a high resistance to oxidation and to foaming. Detergent oils are satisfactory, providing they are non-foaming.

TROUBLE SHOOTING

TROUBLE	CAUSE	REMEDY
LOADER WILL NOT OPERATE	1. Not installed properly. 2. Pump not turning. 3. Low Oil supply. 4. Relief Valve damaged.	1. Recheck installation. 2. Check Drive Assembly. 3. Add recommended oil. 4. Repair and adjust.
NOISY HYDRAULIC PUMP	1. Low oil supply. 2. Filter or screen dirty. 3. Air leak in pump intake line. 4. Foaming oil. 5. Restricted intake line to pump. 6. Reservoir breather plugged. 7. Damaged pump. 8. Defective pump drive coupling.	1. Add recommended oil. 2. Clean and replace. 3. Inspect and repair. 4. Change to recommended oil. 5. Remove restriction. 6. Clean. 7. Replace. 8. Repair and align properly.
SLOW ERRATIC OPERATION	1. Low oil supply. 2. Foaming oil. 3. Air in hydraulic lines. 4. Relief valve too low. 5. Worn pump.	1. Check oil level. 2. Change to recommended oil. 3. Operate several times to remove or loosen hydraulic hose at cylinder and bleed. 4. Readjust. 5. Replace.
FAILURE TO HOLD LOAD UP OR BUCKET TILTS FORWARD	1. Cylinder packing leaks. 2. Valve spool not in neutral. 3. Worn or damaged valve spool.	1. Inspect and replace or adjust. 2. Check valve return spring for proper operation and valve spool binding. 3. Replace complete control valve.

SERVICE

Special instructions for servicing the components of the Henry Loader are given below. These instructions do not apply to tractor parts if they are used in the loader Hydraulic System. Follow Tractor Service Manual when applicable.

LIFT AND BUCKET CYLINDER -- Cylinder service should consist of replacing the packing rings and "O" ring seals. Slight scratches on the piston rod show dirt or grit wear. Slight scratches may be removed with a dry medium grit emery cloth. Deep scratches on the piston rod or scored cylinder walls require replacement of the affected part.

Disassemble cylinder as follows:

1. Run piston rod all the way out.
2. Use spanner wrench to unscrew cylinder flange ring.
3. Remove snap ring with screw driver.
4. Pull piston rod assembly out of cylinder tube.
5. Place piston rod assembly in bench vise. Vise should grip piston rod bearing only.
6. Remove cotter pin and piston rod nut. Slide piston and cylinder head assemblies off piston rod. Note piston assembly so that it can be reinstalled in the same order as removed.

Reassemble cylinder as follows:

1. Wash all parts in cleaning solvent or kerosene.
2. Place "O" rings in grooves on cylinder head.
3. Slip cylinder head over piston rod with screw threads toward rod bearing.
4. Place new packing set on piston. The packing on the lift cylinder has the lips pointing toward the nut on the end of the rod. The packing on the bucket cylinder has the lips pointing away from the nut on the end of the rod. Assemble the rod as follows: Packing retainer, "O" ring, piston with packing, nut. Tighten nut to 250 ft. lbs. torque.
5. Insert piston into cylinder tube with care to prevent damage to packing lip and push cylinder head into cylinder. Squirting oil on cylinder walls before inserting piston will help prevent damage to these seals.
6. Replace snap ring in groove. Make sure the ring is seated properly.
7. Screw cylinder flange ring on cylinder head. Tighten until the ring is just snug.
8. Install cylinder on machine and operate several times to remove air. Hold control valve open several seconds at each end of the stroke to check for leaks. Tighten flange ring if needed.

CONTROL VALVE -- (SEE SEPARATE SHEET)

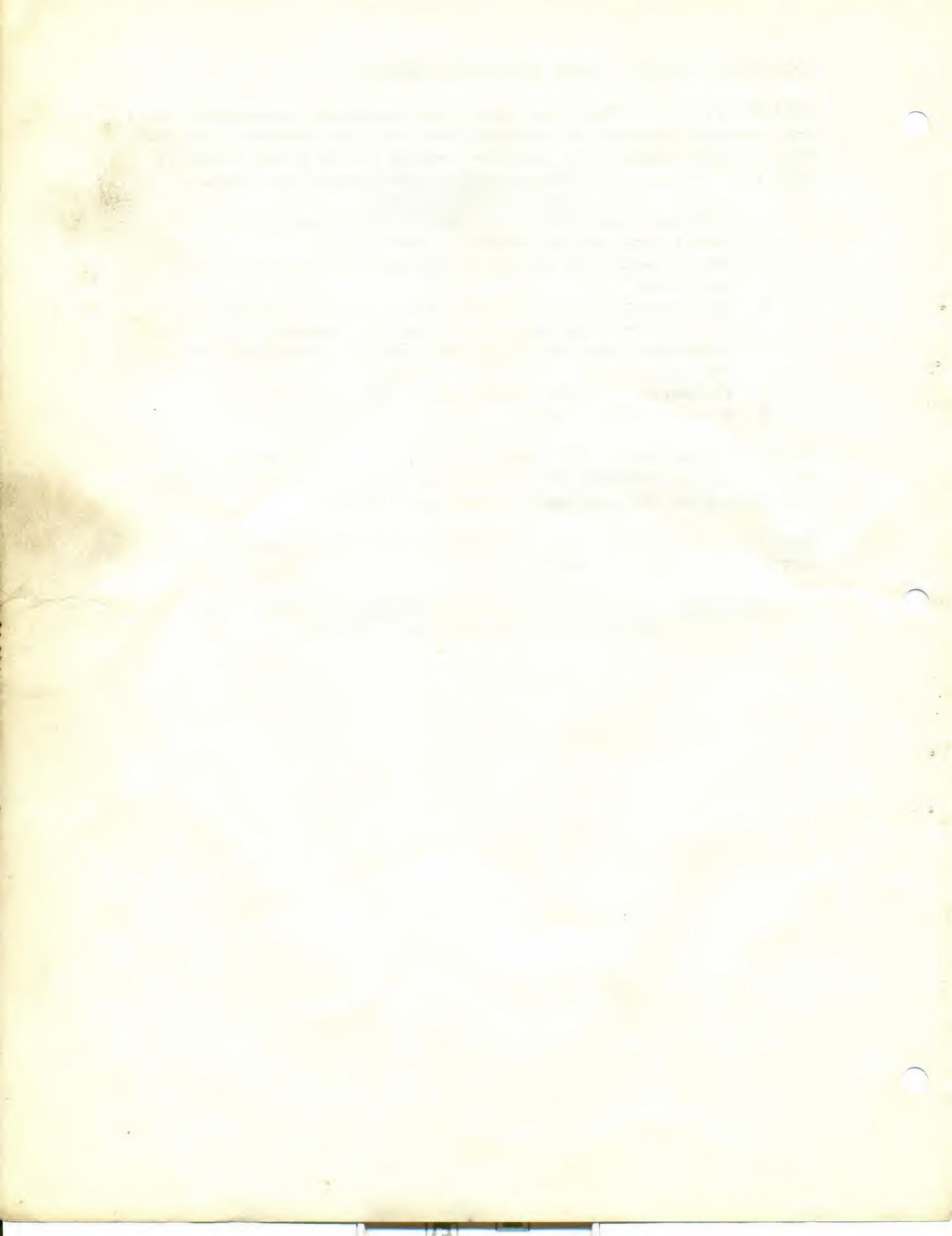
RELIEF VALVE -- The relief valve must be adjusted correctly to limit the maximum load that can be safely handled by the tractor and to protect the hydraulic system. The pressure setting for the L-600 Loader is 1250 PSI. If necessary the pressure can be adjusted as follows:

1. Install pressure gauge in pressure side of control valve.
2. Start tractor and set throttle at 1800 RPM.
3. Remove acorn nut and loosen jam nut on relief valve adjusting screw.
4. Operate bucket control valve. When cylinder reaches end of stroke observe pressure and adjust if necessary. (1250 PSI). Turn clock-wise to increase and counter-clockwise to decrease pressure.
5. Tighten jam nut and replace acorn nut.
6. Remove pressure gauge.

HYDRAULIC PUMP -- The hydraulic pump is normally not serviced in the field unless adequate testing facilities are available. Pumps are available on an exchange basis through your dealer.

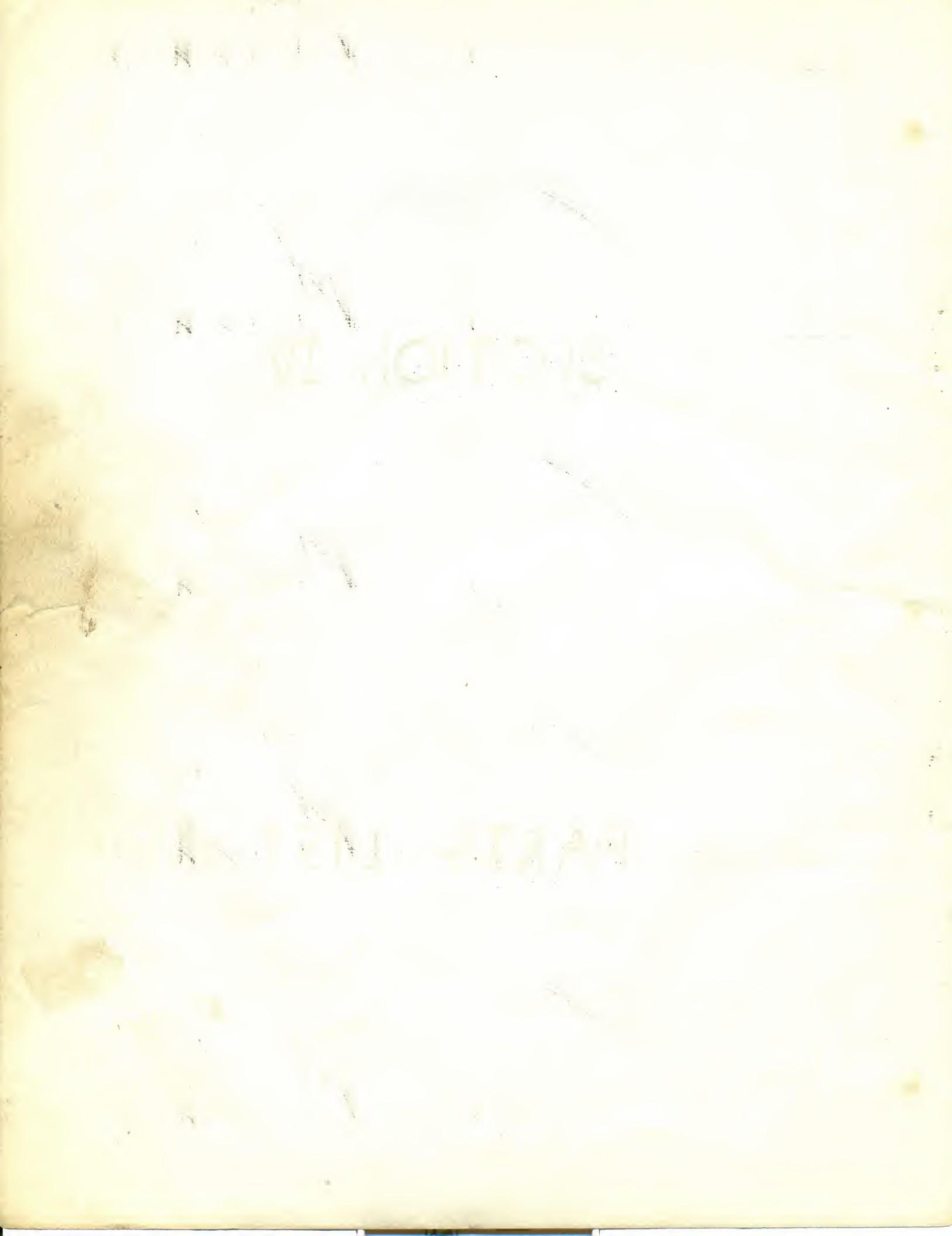
Special Service Manuals are available if it does become necessary to service the pump in the field.

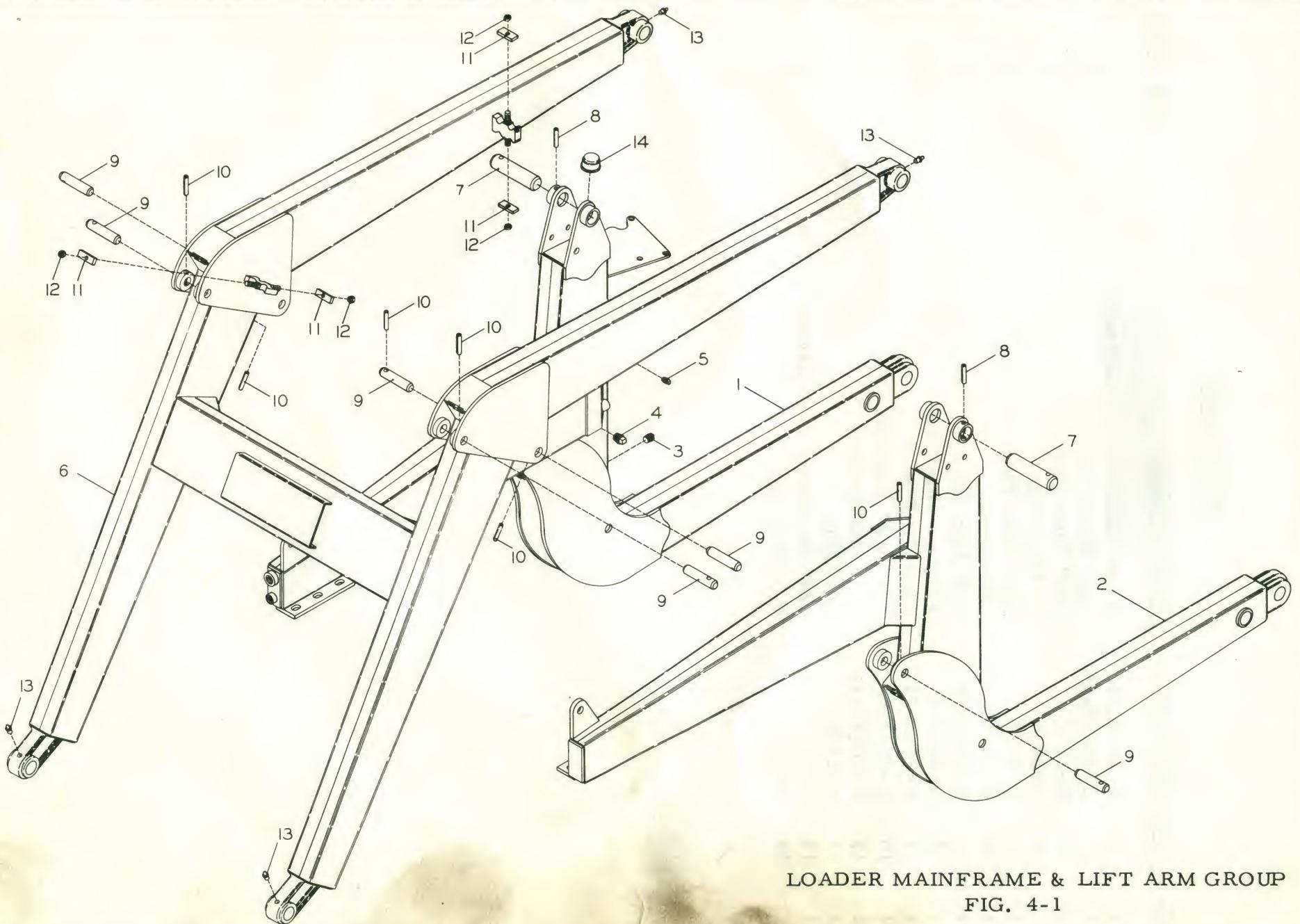
**CAUTION: ALWAYS READJUST PRESSURE RELIEF VALVE
WHEN A NEW PUMP IS INSTALLED.**



SECTION IV

PARTS LIST





LOADER MAINFRAME & LIFT ARM GROUP
FIG. 4-1

PARTS LIST

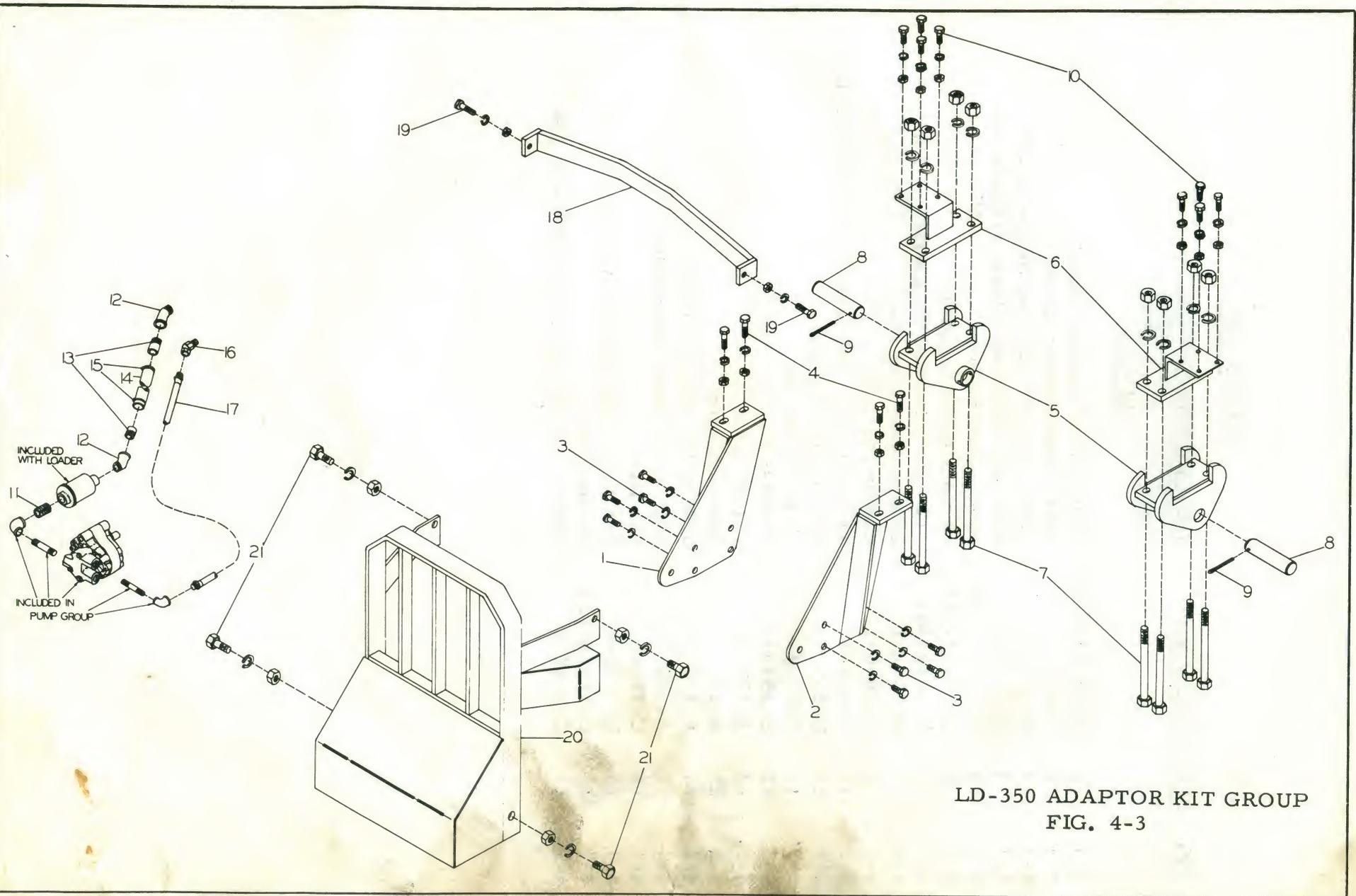
<u>FIG.</u>	<u>ITEM</u>	<u>PART NO.</u>	<u>DESCRIPTION</u>	<u>NO. REQ.</u>
4-1	1	E-50-32-1	Right Mainframe (Reservoir)	1
4-1	2	E-50-32-25	Left Mainframe	1
4-1	3	G-66-6	3/4" Pipe Plug	1
4-1	4	G-66-8	1" Pipe Plug	1
4-1	5	G-66-1	1/8" Pipe Plug	1
4-1	6	E-50-33-1	Lift Arms	1
4-1	7	B-50-4-22	Lift Arm Pin	2
4-1	8	G-48-6-8	3/8" x 2" Roll Pin	2
4-1	9	B-50-4-21	Cylinder Pin	6
4-1	10	G-48-4-8	1/4" x 2" Roll Pin	6
4-1	11	B-50-33-14	Pipe Clamp Bar	4
4-1	12	G-21-6	3/8" Nut	4
4-1	13	G-55-1	1/4" St. Drive Type Grease Zerks	4
4-1	14	A-135	Breather Cap	1



LOADER HYDRAULIC GROUP
FIG. 4-2

PARTS LIST

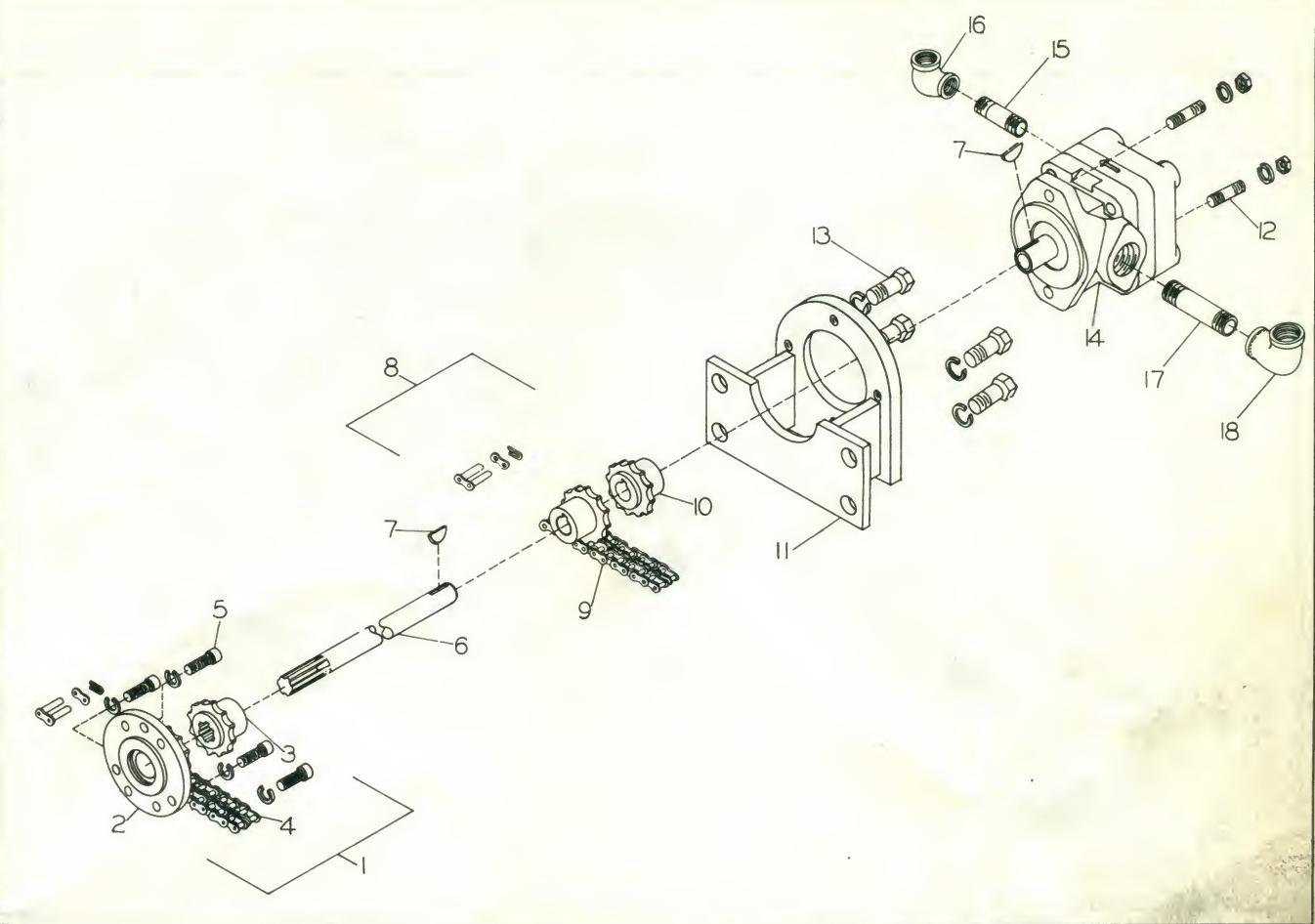
<u>FIG.</u>	<u>ITEM</u>	<u>PART NO.</u>	<u>DESCRIPTION</u>	<u>NO. REQ.</u>
4-2	1	A-246-44B	Control Valve	1
4-2	-	A-246-4F4	Control Valve (w/Float Position)	-
4-2	2	G-4-6-10	3/8" x 2-1/2" USS Cap Screw w/Nut & LW	3
4-2	3	E-2550-30CC	Lift Cylinder	2
4-2	4	E-2550-23CC	Bucket Cylinder w/out Indicator Bracket	1
4-2	5	E-2550-23CCX	Bucket Cylinder w/Indicator Brackets	1
4-2	-	B-50-3-0	Bucket Position Indicator Assembly	-
4-2	6	B-50-3-1	Indicator Rod (39" Long) w/Nuts	1
4-2	7	B-50-3-2	Indicator Tube	1
4-2	8	B-50-3-5	"U" Bolt w/Nuts & LW	1
4-2	9	B-113-11	Bucket Cylinder Pipe	2
4-2	10	A-168-3	3/8" St. Female Adaptor Union	2
4-2	11	G-70-4	1/2" x 45° St. Ells	4
4-2	12	A-351-24	1/2" x 24" Hose Assembly (1 Wire)	4
4-2	13	A-167-3	1/2" St. Female Adaptor Unions	4
4-2	14	B-50-33-16	Lift Arm Pressure Pipe	4
4-2	15	G-68-4x3x3	1/2" x 3/8" x 3/8" Tee	4
4-2	16	A-168-4	3/8" x 45° Female Adaptor Unions	2
4-2	17	A-168-2	3/8" x 90° Adaptor Union	3
4-2	18	A-353-12	3/8" x 12" Hose Assembly (1 Wire)	3
4-2	19	A-353-60	3/8" x 60" Hose Assembly (1 Wire)	1
4-2	20	A-353-66	3/8" x 66" Hose Assembly (1 Wire)	1
4-2	21	A-353-24	3/8" x 24" Hose Assembly (1 Wire)	1
4-2	22	G-61-3	3/8" x 90° St. Ell	1
4-2	23	A-353-48	3/8" x 48" Hose Assembly (1 Wire)	2
4-2	24	A-168-1	3/8" x 45° Adaptor Union	1
4-2	25	G-70-3	3/8" x 45° St. Ell	1
4-2	26	G-65-6-8	3/4" x 2" Nipple	1
4-2	27	G-68-6	3/4" Tee	1
4-2	28	G-66-6	3/4" Pipe Plug	1
4-2	29	B-35444-2	3/4" Hose Nipple	2
4-2	30	A-122-6	1" Hose	6"
4-2	31	A-123	Hose Clamp	2
4-2	32	A-348-18	3/4" x 18" Hose Assembly (1 Wire)	1
4-2	33	A-169-1	3/4" x 90° Adaptor Union	1
4-2	-	A-408	Filter (Complete)	-
4-2	34	A-408-1	Filter Element	1
4-2	35	A-408-2	Filter Case (Inlet)	1
4-2	36	A-408-3	"O" Ring	1
4-2	37	G-4-4-3	1/4" x 3/4" USS Cap Screw	4
4-2	38	A-408-4	Filter Case (Outlet)	1



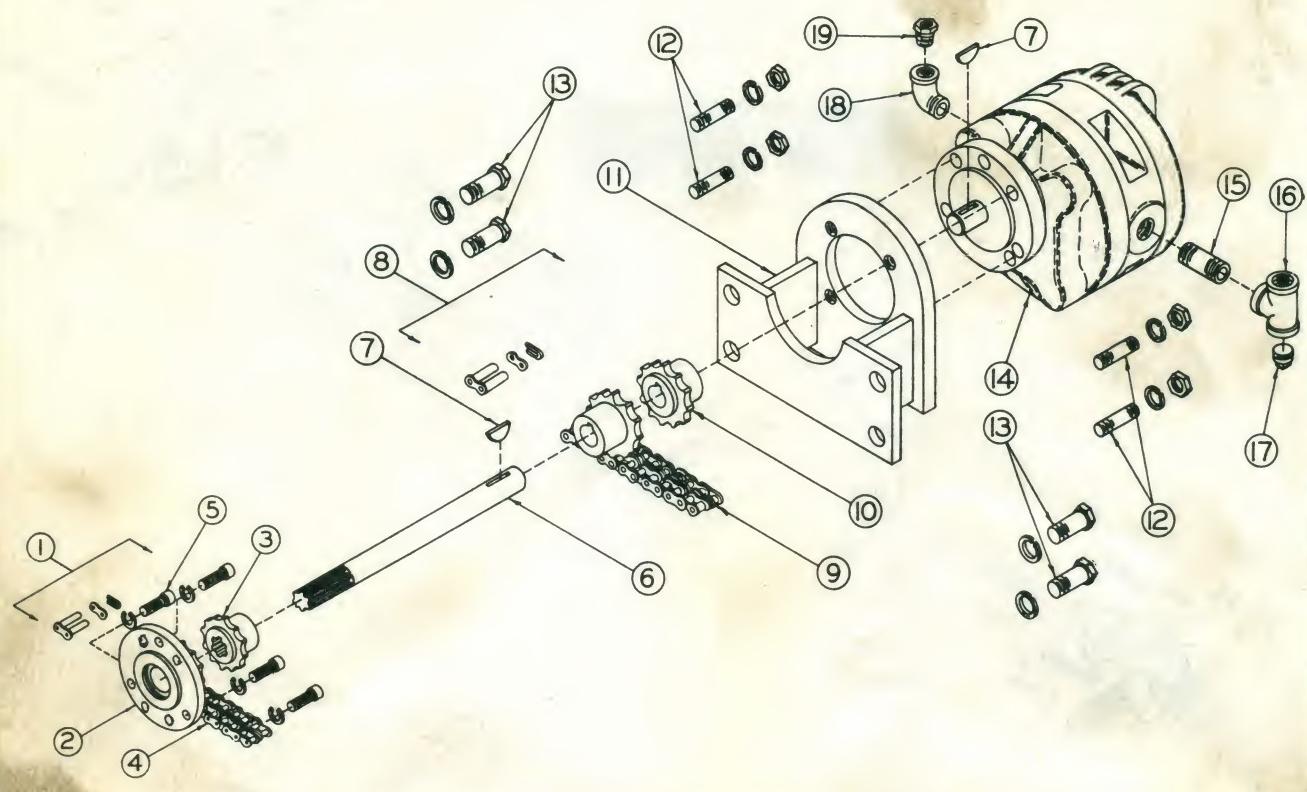
LD-350 ADAPTOR KIT GROUP
FIG. 4-3

PARTS LIST

<u>FIG.</u>	<u>ITEM</u>	<u>PART NO.</u>	<u>DESCRIPTION</u>	<u>NO. REQ.</u>
<u>LD-350</u>				
4-3	1	C-37-74-119R	Right Front Loader Mount	1
4-3	2	C-37-74-119L	Left Front Loader Mount	1
4-3	3	G-4-10-6	5/8" x 1-1/2" USS Cap Screw w/LW	8
4-3	4	G-4-10-8	5/8" x 2" USS Cap Screw w/Nut & LW	4
4-3	5	C-37-74-109	Rear Loader Mount	2
4-3	6	C-37-74-131	Upper Clamp Assembly	2
4-3	7	G-3-12-36	3/4" x 9" Machine Bolt w/Nut & LW	8
4-3	8	B-50-4-12	Loader Mounting Pin	2
4-3	9	G-50-6-12	Cotter Pin (3/8" x 3")	2
4-3	10	G-4-8-6	1/2" x 1-1/2" USS Cap Screw w/Nut & LW	8
4-3	11	G-65-8-6	1" x 1-1/2" Nipple	1
4-3	12	G-70-8	1" x 45° St. Ell	2
4-3	13	B-35444-1	1" Hose Nipple	2
4-3	14	A-197-14	1-1/4" Hose	14"
4-3	15	A-198	Hose Clamps	2
4-3	16	A-169-2	3/4" x 45° Adaptor Union	1
4-3	17	A-350-30	3/4" x 30" Hose Assembly (2 Wire)	1
4-3	18	C-37-85-63	Tie Bar	1
4-3	19	G-4-10-8	5/8" x 2" USS Cap Screw w/Nut & LW	2
4-3	20	D-37-74-123	Grille Guard	1
4-3	21	G-4-12-8	3/4" x 2" USS Cap Screw w/Nut & LW	4



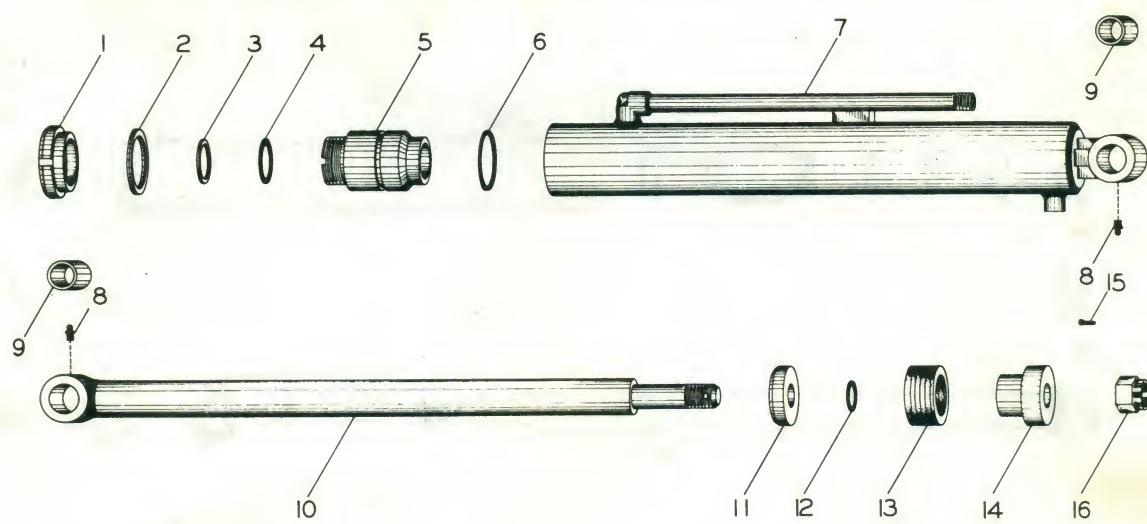
<u>ITEM NO.</u>	<u>PART NO.</u>	<u>DESCRIPTION</u>	<u>NO. REQ.</u>
-20D-			
1	B-37-74-68A	Crankshaft PTO Coupling	-
2	B-37-74-69A	Sprocket w/Mounting Flange	1
3	B-37-7-8	Sprocket (3/4" Splined Bore)	1
4	A-190-2	Chain w/Connecting Pin	1
5	G-7-6-4	3/8" x 1" USS Socket Hd. Cap Screw w/LW	4
6	A-303	Pump Drive Shaft (3/4" Dia. x 16-3/4" Long)	1
7	G-43-9	#9 Woodruff Key	2
8	A-155	Chain Coupling (Complete)	-
9	A-156	Chain Only	1
10	A-245	Sprocket Only	2
11	C-37-74-30	Pump Bracket	1
12	G-15-6-6	3/8" x 1-1/2" USS Studs w/Nut & LW	2
13	G-4-8-6	1/2" x 1-1/2" USS Cap Screw w/LW	4
14	A-110-6	Pump (Vickers 15 GPM @ 1800 RPM)	1
15	G-65-4-8	1/2" x 2" Nipple	1
16	G-73-6-4	3/4" to 1/2" Reducing Ell	1
17	G-65-8-12	1" x 3" Nipple	1
18	G-62-8	1" x 90° Ell	1



<u>ITEM NO.</u>	<u>PART NO.</u>	<u>DESCRIPTION</u>	<u>NO. REQ.</u>
-20DH-			
1	B-37-74-72A	Crankshaft PTO Coupling	-
2	B-37-74-69A	Sprocket w/Mounting Flange	1
3	B-37-7-4	Sprocket (1" Splined Bore)	1
4	A-190-2	Chain w/Connecting Pin	1
5	G-7-6-4	3/8" x 1" USS Socket Hd. Cap Screw w/LW	4
6	C-37-7-21	Pump Drive Shaft (1" Dia. 15-3/4" Long)	1
7	G-43-15	#15 Woodruff Key	2
8	B-37-7-9	Chain Coupling (Complete)	-
9	A-190-2	Chain Only	1
10	B-37-7-5	Sprocket Only	2
11	C-37-74-59	Pump Bracket	1
12	G-15-6-6	3/8" x 1-1/2" Studs w/Nut & LW	4
13	G-4-8-6	1/2" x 1-1/2" USS Cap Screws w/LW	4
14	A-316-1	Pump (Hydrexco 22 GPM @ 1800 RPM)	1
15	G-65-6-6	3/4" x 1-1/2" Nipple	1
16	G-68-8x6x6	1" x 3/4" x 3/4" Tee	1
17	G-66-6	3/4" Plug	1
18	G-61-6	3/4" St. Ell	1
19	G-71-6-4	3/4" to 1/2" Bushing	1

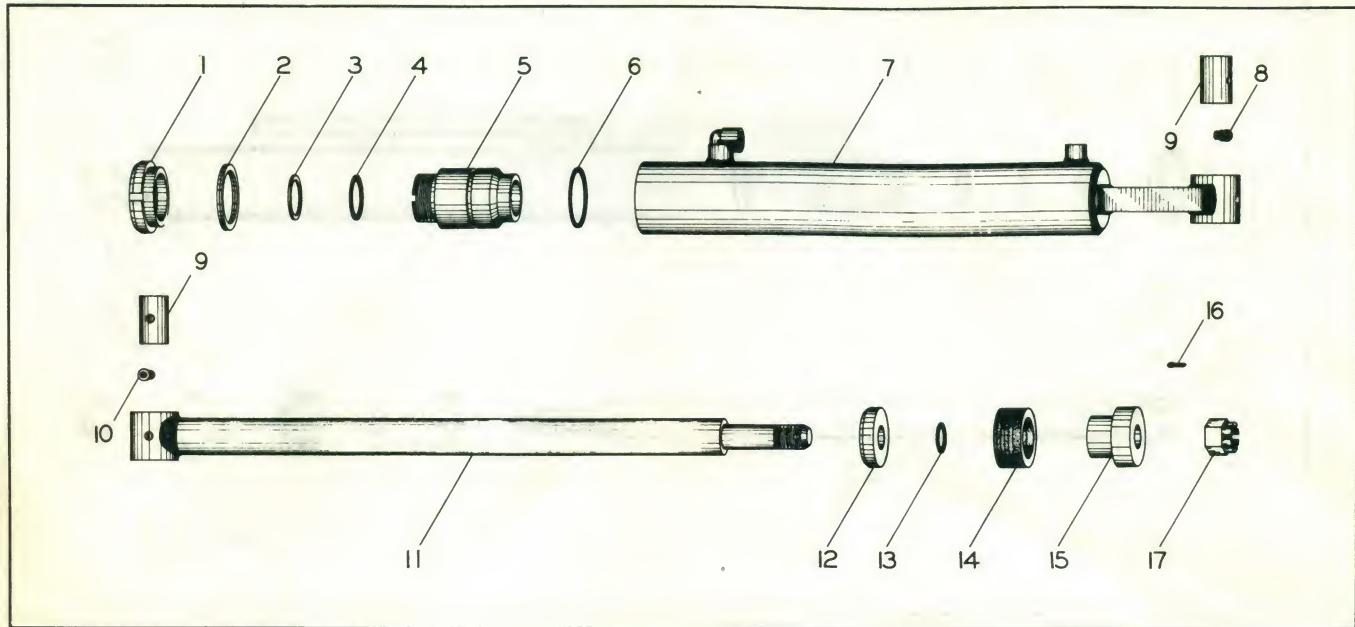
-20DH-

1	B-37-74-72A	Crankshaft PTO Coupling	-
2	B-37-74-69A	Sprocket w/Mounting Flange	1
3	B-37-7-4	Sprocket (1" Splined Bore)	1
4	A-190-2	Chain w/Connecting Pin	1
5	G-7-6-4	3/8" x 1" USS Socket Hd. Cap Screw w/LW	4
6	C-37-7-21	Pump Drive Shaft (1" Dia. 15-3/4" Long)	1
7	G-43-15	#15 Woodruff Key	2
8	B-37-7-9	Chain Coupling (Complete)	-
9	A-190-2	Chain Only	1
10	B-37-7-5	Sprocket Only	2
11	C-37-74-59	Pump Bracket	1
12	G-15-6-6	3/8" x 1-1/2" Studs w/Nut & LW	4
13	G-4-8-6	1/2" x 1-1/2" USS Cap Screws w/LW	4
14	A-316-1	Pump (Hydrexco 22 GPM @ 1800 RPM)	1
15	G-65-6-6	3/4" x 1-1/2" Nipple	1
16	G-68-8x6x6	1" x 3/4" x 3/4" Tee	1
17	G-66-6	3/4" Plug	1
18	G-61-6	3/4" St. Ell	1
19	G-71-6-4	3/4" to 1/2" Bushing	1



LIFT CYLINDER ASSEMBLY
(2-1/2" Bore, 30" Stroke)

<u>ITEM NO.</u>	<u>PART NO.</u>	<u>DESCRIPTION</u>	<u>NO. REQ.</u>
-	E-2550-30CC	Cylinder Assembly	
1	B-104-9	Flange Ring	1
2	A-403-2	Snap Ring	1
3	A-288-3	Back-Up-Washer	1
4	A-202-10	"O" Ring Rod Seal	1
5	B-103-13	Cylinder Head	1
6	A-202-7	"O" Ring Head Seal	1
7	C-101-3-3C	Cylinder Tube	1
8	G-55-1	1/4" St. Drive Type Grease Fitting	2
9	A-170	Bronze Bushing	2
10	C-102-2-17C	Piston Rod	1
11	B-114-2	Packing Retainer Washer	1
12	A-202-9	"O" Ring	1
13	A-203-5	Packing (Set)	1
14	B-110-3	Piston	1
15	G-50-3-8	Cotter Pin (3/16" x 2")	1
16	G-26-16	Castle Nut (1")	1



BUCKET CYLINDER ASSEMBLY
 (2-1/2" Bore, 23" Stroke)

<u>ITEM NO.</u>	<u>PART NO.</u>	<u>DESCRIPTION</u>	<u>NO. REQ.</u>
-	E-2550 23CC	Cylinder Assembly (w/Out Indicator Brackets)	
-	E-2550-23CCX	Cylinder Assembly (w/Indicator Brackets)	
1	B-104-9	Flange Ring	1
2	A-403-2	Snap Ring	1
3	A-288-3	Back-Up-Washer	1
4	A-202-10	"O" Ring Rod Seal	1
5	B-103-13	Cylinder Head	1
6	A-202-7	"O" Ring Head Seal	1
7	D-101-3-1C	Cylinder Tube	1
8	G-55-4	1/4" x 67-1/2° Drive Type Grease Fitting	1
9	A-170	Bronze Bushing	2
10	G-55-1	1/4" St. Drive Type Grease Fitting	1
11	C-102-2-19C	Piston Rod	1
12	B-114-2	Packing Retainer Washer	1
13	A-202-9	"O" Ring	1
14	A-203-5	Packing (Set)	1
15	B-110-3	Piston	1
16	G-50-3-8	Cotter Pin (3/16" x 2")	1
17	G-26-16	Castle Nut (1")	1

144.80

CESSNA

GEAR TYPE PUMP

MAINTENANCE & SERVICE

OPERATION

Two matched gears are closely fit into a housing so that a pumping chamber is formed. As the drive shaft and gears rotate oil enters through one port and is carried between gear teeth around the periphery of the gears to be discharged through the opposite port. Since the teeth are always in contact with the inside contour of the housing, oil flow starts with shaft rotation. The volume of oil flowing through the pump will vary directly as the speed of rotation.

SHAFT ROTATION

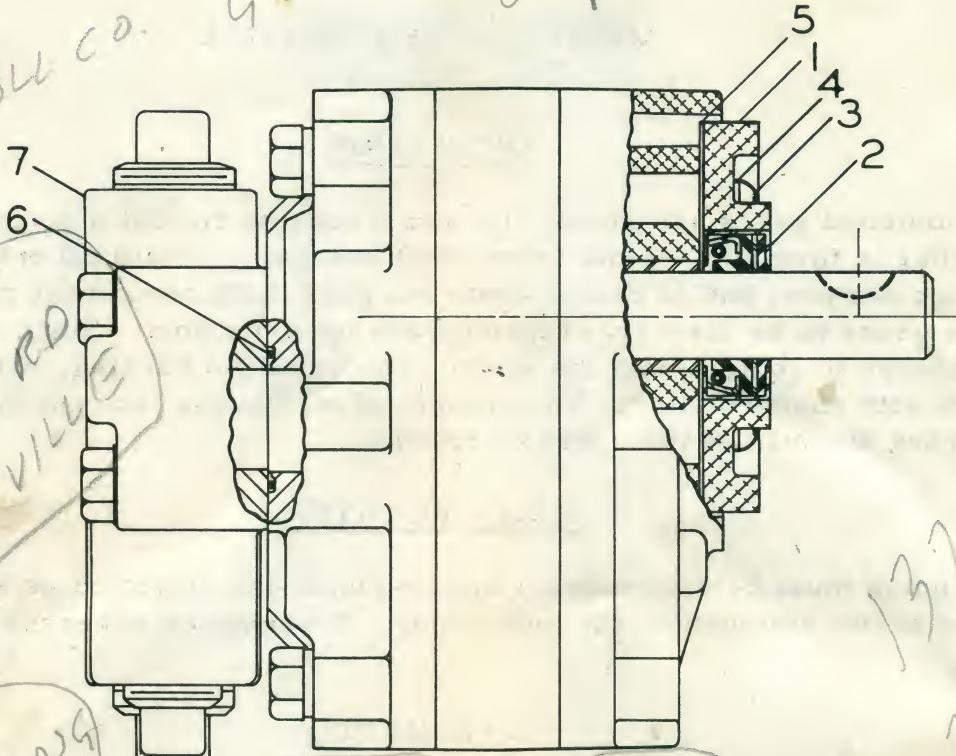
This pump must be driven in a counter-clockwise direction as shown by the arrow stamped on the pump body. It cannot be reversed in the field.

OVERHAUL

This pump is sealed at the factory and should not be disassembled in the field, except for removal and replacement of the shaft seal assembly. Factory rebuilt pumps are available on an exchange basis when complete overhaul is necessary. The shaft seal can be replaced as follows:

1. Remove the six recessed head machine screws (3) that hold the seal retainer (1) in place.
2. Remove the seal assembly (2).
3. Remove the gasket (5) behind the seal retainer and replace it with a new one. Install the new seal and retainer as follows:
 1.
 - (a) Examine the exposed shaft end and if there are any sharp burrs or corners, they should be smoothed over with emery cloth. Thoroughly lubricate both the shaft and the rubber seal of the shaft seal.
 - (b) Carefully work the seal lip into the shaft, using a rotating motion. The slightest nick on the seal lips will cause leakage. Work the seal retainer into its seat in the pump case and install new screws and lockwashers. Tighten securely.

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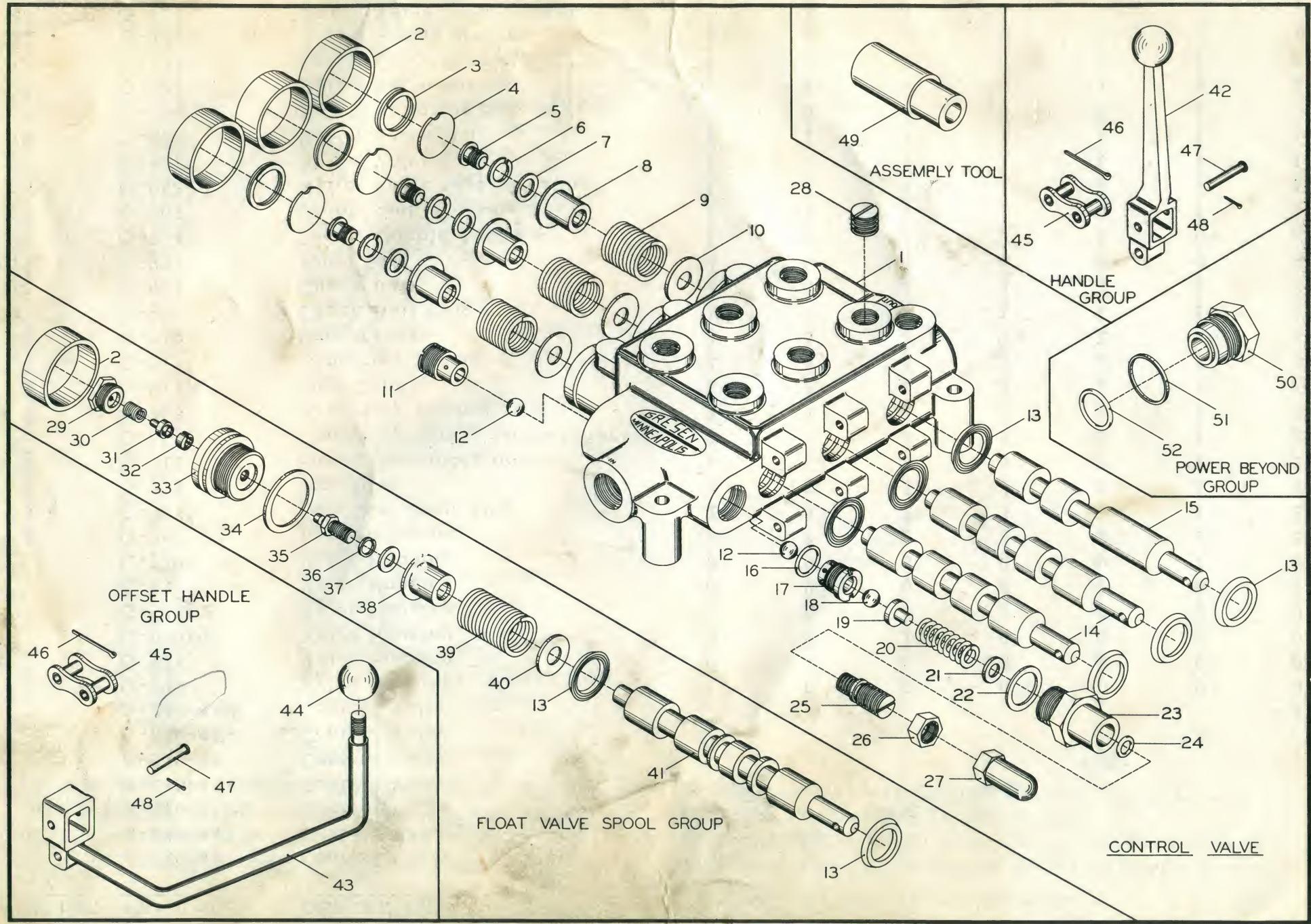


PARTS LIST

A-395-1 CESSNA PUMP

<u>ITEM NO.</u>	<u>PART NO.</u>	<u>DESCRIPTION</u>	<u>NO. REQ.</u>
-	A-394-1	Shaft Seal Repair Kit	*
1	A-394-2	Seal Retainer	1
2	A-394-3	Shaft Seal	1
3	A-394-4	#10 - 24 Machine Screw	6
4	A-394-5	Lockwasher	6
5	A-394-6	Gasket	1
6	A-394-7	Manifold Block	1
7	A-394-8	"O" Ring	2

* Includes Items 1 thru 5



PARTS LIST

<u>ITEM NO.</u>	<u>PART NO.</u>	<u>DESCRIPTION</u>	* A	* B	* C	* D	* E	* F	* G
	A-246-43	Control Valve							
	A-246-443	Control Valve							
	A-246-43PB	Control Valve							
	A-246-443PB	Control Valve							
	A-246-44	Control Valve							
	A-246-4F4	Control Valve							
	A-246-44B	Control Valve							
1	G-990	Valve Housing	1	0	0	0	0	0	0
	G-975	Valve Housing	0	1	0	0	0	0	0
	G-990PB	Valve Housing	0	0	1	0	0	0	0
	G-975PB	Valve Housing	0	0	0	1	0	0	0
	G-990	Valve Housing	0	0	0	0	1	0	1
	G-1200	Valve Housing	0	0	0	0	0	1	0
2	G-967	Rubber Bonnet	2	3	2	3	2	2	2
3	G-914	Stop Disc Snap Ring	2	3	2	3	2	1	2
4	G-912	Stop Disc	2	3	2	3	2	1	2
5	G-510	Spring Assembly Bolt	2	3	2	3	2	1	2
6	G-564	Centering Spring Lockwasher	2	3	2	3	2	1	2
7	G-966	Assembly Washer	2	3	2	3	2	1	2
8	G-911A	Stop Collar	2	3	2	3	2	1	2
9	G-913	Centering Spring	2	3	2	3	2	1	2
10	G-910A	Stop Washer	2	3	2	3	2	1	2
11	G-920	Check Ball Plug	1	1	1	1	1	1	1
12	G-963	Check Ball	2	2	2	2	2	2	2
13	G-932	Spool Seal	4	6	4	6	4	4	4
14	G-904	Spool, Double Acting	1	2	1	2	2	0	2
15	G-903	Spool, Single Acting	1	1	1	1	0	1	0
16	G-062	Relief Valve Seat "O" Ring	1	1	1	1	1	1	1
17	G-921	Relief Valve	1	1	1	1	1	1	1
18	G-014	Relief Valve Ball	1	1	1	1	1	1	1
19	G-994	Ball Seat Spring Spacer	0	0	0	0	0	1	0
20	G-922	Relief Valve Spring	1	1	1	1	1	0	1
	G-1212	Relief Valve Spring	0	0	0	0	0	1	0
21	G-1213	Relief Spring Washer	0	0	0	0	0	1	0
22	G-923	Relief Valve Body Gasket	1	1	1	1	1	1	1

23	G-924	Relief Valve Body	1	1	1	1	1	1
24	G-926	Adjusting Screw "O" Ring	1	1	1	1	1	1
25	G-925	Adjusting Screw	1	1	1	1	1	1
26	G-973	Adjusting Screw Jam Nut	1	1	1	1	1	1
27	G-974	Acorn Cap	1	1	1	1	1	1
28	G-927	Port Plug (For Use w/Single Acting Spool)	1	1	1	1	1	1
29	G-1209	Float Detent Spring Cap	0	0	0	0	0	0
30	G-1211	Float Detent Spring	0	0	0	0	0	0
31	G-1207	Float Detent Finger Holder	0	0	0	0	0	0
32	G-1208	Float Detent Finger	0	0	0	0	0	0
33	G-1206	Float Detent Cap	0	0	0	0	0	0
34	G-952	Gasket	0	0	0	0	0	0
35	G-1203	Float Detent Adaptor	0	0	0	0	0	0
36	G-1215	Float Assembly Lockwasher	0	0	0	0	0	0
37	G-1214	Float Assembly Washer	0	0	0	0	0	0
38	G-1205	Float Spring Collar	0	0	0	0	0	0
39	G-1210	Float Centering Spring	0	0	0	0	0	0
40	G-1202	Float Stop Washer	0	0	0	0	0	0
41	G-1204	Spool, Double Acting w/Float	0	0	0	0	0	0
42	G-902	Handle	-	-	-	-	-	-
-	G-1201	Handle, Float Valve	-	-	-	-	-	-
43	C-40-2-132	Handle, Offset	-	-	-	-	-	-
44	A-131	Knob	-	-	-	-	-	-
45	G-928	Handle, Link Assembly	2	2	2	3	2	2
46	G-929	Handle Link Cotter Pin	2	3	2	3	2	2
47	G-553	Handle Pins	2	3	2	3	2	2
48	G-086	Handle Cotter Pins	2	3	2	3	2	2
49	G-T9	Special Seal Installation Tool	-	-	-	-	-	-
50	G-951	Power Beyond Sleeve	0	1	0	1	0	0
51	G-952	Power Beyond Sleeve Gasket	0	1	0	1	0	0
52	G-954	Power Beyond Sleeve Seal	0	1	0	1	0	0

(A) 2 Spool Valve (1 Double Acting & 1 Single Acting)

(B) 3 Spool Valve (2 Double Acting & 1 Single Acting)

(C) 2 Spool Valve w/Pressure Beyond Port

(1 Double Acting & 1 Single Acting)

(D) 3 Spool Valve w/Pressure Beyond Port (2 D. A. & 1 S. A.)

(E) 2 Spool Valve (Both Double Acting)

(F) 2 Spool Valve (1 D. A. & 1 D. A. w/Float Position)

(G) 2 Spool Valve (Both Double Acting w/Bottom Dump)

* Includes all Items in Column below.

NOTE: Spools are not available for field replacement. Power beyond valve housings are machined for power beyond sleeves and are used in series with another control valve.

INSTALLATION AND SERVICE

The control valve has tripod mounting feet to minimize the possibility of valve distortion, however, precaution should be taken not to tighten mounting bolts to the extent that the spools bind in the valve housing. All valve spools are installed in valve housing by a select hone fit. Spool replacement should not be attempted in the field.

Worn or damaged spool seals can be replaced in the field, however, replacement should not be attempted unless the special tool is available. Replacement should be made as follows:

- (a) Remove rubber bonnets (2), stop disc snap ring (3) and stop disc (4).
- (b) Remove spring assembly bolt (5), washers (6 & 7), stop collar (8) and centering spring (9).
- (c) Remove handle pin (47). Push spool into housing from the front of valve until front seal (13) is exposed and remove seal. Pull spool out of housing, being very careful that neither spool nor bore is scratched, or damaged and remove back seal (13).
- (d) Clean both seal grooves thoroughly. Insert a new seal (13) in the front seal groove (handle end) with the "U" cup seal placed toward the valve body. When seal is properly placed in the groove straighten by running your finger around the exposed edge of the seal.
- (e) Insert special tool (49) into the spool housing from the front of the valve and through the new seal until shoulder on tool touches valve housing.
- (f) Insert spool from back of housing. Push the spool into the housing, keeping a firm grip on the special tool until you have forced the tool just out of the housing. In pushing the spool through the housing a slight twisting motion will assist the movement.
- (g) Insert the special tool into the back of the housing bore and push the valve spool until the shoulder on the special tool stops your progress.
- (h) Remove special tool and the rear seal groove will be uncovered. Install new seal as in step (d).
- (i) Again insert the special tool into the spool bore and with a twisting motion carefully push tool through the new seal until shoulder stops progress. With a twisting action push spool back against the special tool until 1/4" of the polished surface of the spool remains exposed at the front of the valve.
- (j) Remove special tool and replace handle pin (47). Insert stop washer (10), spring (9), stop collar (8) and install snap ring (3).
- (k) Move control handle toward valve as far as it will go to compress spring (9) and replace screw (5) with washers (6 & 7).
- (l) Remove snap ring (3) and install stop disc (4). Replace snap ring and bonnet.



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